

REMARKS

Claims 14-26 stand rejected under 35 USC 112, second paragraph. Claims 14-26 have been replaced with new claims 27-47, and in preparing the new claims, every effort has been made to avoid indefinite language. Applicant believes that the new claims 27-47 are not open to rejection under 35 USC 112, second paragraph.

All claims stand rejected under 35 USC 103 based on Gulati and Bampton as the principal references.

The subject matter of this application, as defined in the new claim 27, is a method of manufacturing a tank suitable for storing very cold cryogenic liquids. In accordance with claim 27, the tank comprises at least one self-supporting volume unit having a basic form corresponding to a rectangular prism having a first side opposite a third side and a second side opposite a fourth side. The method comprises forming a first plane element by providing first mechanically extruded aluminum profile elements each having a plane part and a stiffening part extending essentially perpendicular to the plane part and having a free distal end relative to the plane part, forming an intermediate element by attaching the first profile elements to each other by their plane parts using friction welding, providing second mechanically extruded aluminum profile elements, forming a stiffener by attaching the second profile elements to each other by friction welding, and attaching the stiffener to the intermediate element to form a first plane element. The method further comprises providing at least second, third and fourth plane elements each having at least one stiffener attached thereto, and attaching the first, second, third and fourth plane elements to each other to form respective sides of the self-supporting volume unit. The stiffeners attached to the plane elements extend only partly through the internal space of the volume unit between opposite sides thereof.

Gulati discloses a tank having an internal truss frame structure 18, a grillage of stiffeners 27 and stringers 28 attached to the truss frame structure 18, and a thin plate cover 17 attached to the grillage. The truss frame structure, the thin plate cover and the grillage may be constructed from any suitable material that is ductile and has acceptable

fracture characteristics at cryogenic temperatures, and Gulati teaches that the preferred material for at least the thin plate cover is steel. The closest counterpart in Gulati for the first plane element recited in claim 27 appears to be the combination of the thin plate cover 17 and the grillage of stiffeners 27 and stringers 28. However, Gulati does not disclose or suggest that this structure 17/27/28 should be fabricated by providing first mechanically extruded aluminum profile elements, forming an intermediate element by attaching the first profile elements to each other using friction welding, providing second mechanically extruded aluminum profile elements, forming a stiffener by attaching the second profile elements to each other by friction welding, and attaching the stiffener to the intermediate element to form the first plane element, as recited in claim 27. Moreover, Gulati does not disclose manufacture of a self-supporting volume unit within the meaning of claim 27, since the tank sections 81a, 82b, 82a and 81b (FIG. 7, for example) are based on utilizing a separate truss frame structure assembled inside the tank sections. Further as shown in FIGS. 1B and 1C, the truss frame structure includes elements extending through the entire internal space of the tank sections between opposite sides thereof.

The examiner relies on Bampton as disclosing friction welding applied to securing parts of a cylindrical tank together. Bampton does not supply the deficiency in Gulati regarding fabrication of the first plane element from first mechanically extruded aluminum profile elements and second mechanically extruded aluminum profile elements, as recited in claim 27.

In view of the foregoing, applicant submits that the subject matter of claim 27 is not disclosed or suggested by Gulati and Bampton, whether taken singly or in combination. Therefore, claim 27 is patentable and it follows that the dependent claims 28-39 also are patentable.

Claim 40 is directed to a tank comprising at least one self-supporting volume unit, the volume unit comprising a first plane element which in turn comprises an intermediate element and a stiffener. As set forth in claim 40, the intermediate element comprises first mechanically extruded aluminum profile elements each having a plane part and a stiffening

part extending essentially perpendicular to the plane part and having a free distal end relative to the plane part, the first profile elements being attached to each other by friction welding their plane parts. The stiffener comprises second mechanically extruded aluminum profile elements attached to each other by friction welding. The stiffener is attached to the intermediate element. The first plane element and second, third and fourth plane elements are attached to each other to form respective sides of the volume unit. The stiffeners of the plane elements extend only partly through the internal space of the volume unit between opposite sides thereof.

Although applicant's definition of the first plane element in claim 40 includes process limitations, these limitations are entitled to weight in a claim directed to the product, since it can be determined from examination of the first plane element that it comprises mechanically extruded aluminum profile elements that have been attached to each other by friction welding. Accordingly, the arguments presented above in support of claim 27 are applicable to claim 40, and it follows that claim 40 and the dependent claims 41-46 are patentable.

The arguments presented above in support of claim 40 are applicable also to claim 47, drawn to a volume unit. Therefore, claim 47 is patentable.

Respectfully submitted,

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